

REMARKS

Initially, Applicants would like to express their appreciation to the Examiner, Ms. Jane Rhee, for the courtesy of the interview conducted with their attorney Ms. Linda H. Hodge, on October 28, 2008. During the interview, the claims were discussed and compared to the prior art applied by the Examiner in the rejections, *i.e.*, INOUE et al. (U.S. Patent Appl. Pub. No. 2003/0157404); KAGEYAMA (U.S. Patent Appl. Pub. No. 2001/0006746); and ENDO (JP 2001-155698). In particular, Applicants' attorney pointed out that the instant invention provides, *inter alia*, a battery case including a generally oval sealing plate, a battery having a thickness of 4mm or more and an aspect ratio of 3 or more, and a breakage point at an intersection between a circular part and a linear part in the interface between the battery case and the sealing plate. No agreement was reached. Accordingly, Applicants have presented amended claim 1, in order to obtain an early allowance of the claims of record.

Applicants would also like to express appreciation to the Examiner for the detailed Final Official Action provided.

However, Applicants note that the Examiner has not acknowledged Applicants' **Claim for Priority** and receipt of the certified copy of the priority document. It is noted that the Patent Application Information Retrieval (PAIR) system on the U.S. Patent and Trademark Office website reflects Applicants' Claim for Priority in the instant application. Accordingly, the Examiner is requested to acknowledge receipt of Applicants' Claim for Priority and receipt of the certified copy of the priority document in the next Official Action.

Upon entry of the above amendment, claim 1 will have been amended. Accordingly, claims 1-4 are currently pending. Applicants respectfully request reconsideration of the outstanding

rejection and allowance of claims 1-4 in the present application. Such action is respectfully requested and is now believed to be appropriate and proper.

The Examiner has rejected claims 1-4 under 35 U.S.C. § 103(a) as being unpatentable over INOUE et al. (U.S. Patent Appl. Pub. No. 2003/0157404) in view of KAGEYAMA (U.S. Patent Appl. Pub. No. 2001/0006746) and ENDO (JP 2001-155698).

Although Applicants do not necessarily agree with the Examiner's rejection of claim 1 on this ground, nevertheless, Applicants have amended independent claim 1 to clearly obviate the above noted ground of rejection in order to expedite prosecution of the present application. In this regard, Applicants note that INOUE et al., KAGEYAMA, and ENDO fail to teach or suggest the subject matter claimed in amended claim 1. In particular, claim 1, as amended, sets forth a generally oval battery including, inter alia, a battery case with a generally oval cross section; a generally oval sealing plate; and an electrode plate assembly; the sealing plate having a U-shaped cross section; the battery having a thickness of 4mm or more and an aspect ratio of 3 or more; and “wherein a location where the shape of the battery case changes from a circular part to a linear part or from a linear part to a circular part in an interface between said battery case and the sealing plate acts as a point where breakage occurs for discharge of gas”.

This amendment is fully supported by the specification, including the claims and drawings, and no prohibited new matter has been added. In particular, support for the present amendment may be found at least in figure 3.

Applicants' claimed battery 1 includes a generally oval battery case 2, a generally oval sealing plate 3, and an electrode plate assembly, as shown in figure 1. The sealing plate 3 has a U-

shaped cross section; and the battery 1 has a thickness of 4 mm or greater, and an aspect ratio of 3 or more.

The battery of the present invention provides an explosion prevention mechanism including a discharge mechanism in which the weld between the sealing plate 3 and the battery case 2 will selectively break at a location where the shape of the battery case changes from the linear part 4 to the circular part 5 or where the shape of the battery case changes from the circular part 5 to the linear part 4. The selective breakage at the particular location controls gas discharge and prevents explosion.

As shown in figure 2 of the present application, if the internal pressure in the battery case rises, the battery 1 becomes deformed. In the present invention, the weld between the battery case 2 and the sealing plate 3 is made to break at a location where the shape of the battery case changes from the circular part to the linear part or from the linear part to the circular part. See particularly figure 3. Accordingly, Applicants' claimed invention provides a battery which easily discharges gas and prevents explosion in a controlled and predictable manner, without requiring expensive manufacturing equipment or many processing steps.

Due to the differences in the deformation of the circular part and the linear part, the weld will break at a location where the shape of the battery case changes from the circular part to the linear part or from the linear part to the circular part. Accordingly, the breakage of the weld in Applicant's battery is predictable and controllable, thus improving the performance of the battery and improving the explosion prevention feature of Applicants' invention.

The INOUE et al. publication teaches a battery having a generally oval sealing plate. However, INOUE et al. fails to teach or suggest a battery having a thickness of 4mm or more and an

aspect ratio of 3 or more, and a breaking point at a location where the shape of the battery case changes from the circular part to the linear part or from the linear part to the circular part in an interface between the battery case and the sealing plate.

The KAGEYAMA publication is directed to a battery having a thickness of 4.5mm and a width of 34mm. The KAGEYAMA battery is “flat and rectangular”. See paragraph [0068]. KAGEYAMA fails to teach or suggest a battery having a generally oval cross section; a generally oval sealing plate; and a breaking point at a location where the shape of the battery case changes from the circular part to the linear part or from the linear part to the circular part in an interface between the battery case and the sealing plate.

There is nothing in the INOUE et al. or KAGEYAMA publications that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claim 1 under 35 U.S.C. § 103(a), and thus, the only reason to combine the teachings of INOUE et al. and KAGEYAMA results from a review of Applicants’ disclosure and the application of impermissible hindsight.

Further, the ENDO publication is directed to a rectangular battery. As shown in the figures, the sealing plate 2 is rectangular with two long sides of the rectangle, two shorter sides of the rectangle, and gently curved corners at the intersection points between the respective long sides and shorter sides. The ENDO sealing plate does not include a circular part, as does Applicants’ sealing plate. Accordingly, the ENDO sealing plate also does not include a location where the shape of the battery case changes from a linear part to a circular part or from a circular part to a linear part. However, even assuming, arguendo, that the gently curved corners of the ENDO sealing plate could be construed as circular parts, the ENDO sealing plate still does not include a breakage point at a

location where the shape of the battery case changes from the circular part to the linear part or from the linear part to the circular part. In this regard, the ENDO battery includes breakage points 8. As shown clearly in figure 2, the breakage points 8 may be located: (figure 2A) in the center of the short sides of the rectangle; (figure 2B) directly on two opposite corners; or (figure 2C) directly on four corners as shown in figure 2C. Accordingly, ENDO teaches that breakage points may be positioned *completely on a linear side or completely on a curved corner*. ENDO does not teach positioning breakage points 8 at a location that is between a linear side and a curved corner. Moreover, ENDO does not teach positioning breakage points 8 at a location where the shape of the battery case changes from a linear part to a circular part or from a circular part to a linear part. Accordingly, even assuming, arguendo, that the curved corners could be construed as circular parts, the ENDO publication still does not teach a breakage point at a location where the shape of the battery case changes from a circular part to a linear part or from a linear part to a circular part, as set forth in amended claim 1.

Therefore, the ENDO publication fails to cure the deficiencies of the INOUE et al. device, and even assuming, arguendo, that the teachings of INOUE et al. and ENDO have been properly combined, Applicants' claimed generally oval battery including, inter alia, a battery case with a generally oval cross section; a generally oval sealing plate; and an electrode plate assembly; the sealing plate having a U-shaped cross section; the battery having a thickness of 4mm or more and an aspect ratio of 3 or more; and "wherein a location where the shape of the battery case changes from a circular part to a linear part or from a linear part to a circular part in an interface between said battery case and the sealing plate acts as a point where breakage occurs for discharge of gas" would not have resulted from the combined teachings thereof.

Moreover, it is respectfully submitted that, in the instant invention, the *combination* of the generally oval battery case and sealing plate, the thickness of 4 mm or more, the aspect ratio of 3 or more, and breakage point positioned at a location where the shape of the battery case changes from a circular part to a linear part or from a linear part to a circular part, together provide the breakage point where breakage occurs for the discharge of gas. As disclosed in detail in the instant specification, the generally oval battery case and sealing plate, the particular claimed thickness and aspect ratio, and the change in shape of the battery case from the circular part to the linear part and from the linear part to the circular part, *combine* to provide the breakage point where breakage occurs for the discharge of gas, of Applicants' claimed invention.

Therefore, there is nothing in the cited prior art that would lead one of ordinary skill in the art to make the modification suggested by the Examiner in the rejection of claim 1 under 35 U.S.C. § 103(a) over INOUE et al. in view of KAGEYAMA and ENDO. In this regard, it is noted that the rejection includes a modification of the thickness and the aspect ratio from the KAGEYAMA reference, *and* the addition of a breakage point from the ENDO reference. There is nothing in the prior art from which to conclude that it would have been obvious to make *all* of these modifications, or that such modifications would result in Applicants' claimed invention. Thus, the only reason to combine the teachings of INOUE et al., KAGEYAMA and ENDO results from a review of Applicants' disclosure and the application of impermissible hindsight.

Accordingly, the rejection of claim 1 under 35 U.S.C. § 103(a) over INOUE in view of KAGEYAMA and ENDO is improper for all the above reasons and withdrawal thereof is respectfully requested.

Applicants submit that dependent claims 2-4, which are at least patentable due to their dependency from claim 1 for the reasons noted above, recite additional features of the invention and are also separately patentable over the prior art of record based on the additionally recited features.

Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejection, and an early indication of the allowance of claims 1-4.

SUMMARY AND CONCLUSION

In view of the foregoing, it is submitted that the present amendment is proper for entry since it merely clarifies the language with respect to the breakage point, which is an issue about which Applicants' have already presented arguments, and it is further submitted that none of the references of record, considered alone or in any proper combination thereof, anticipate or render obvious Applicants' invention as recited in claims 1-4. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Accordingly, consideration of the present amendment, reconsideration of the outstanding Final Official Action, and allowance of the present amendment and all of the claims therein are respectfully requested and now believed to be appropriate.

Applicants have made a sincere effort to place the present application in condition for allowance and believe that they have now done so.

Any amendments to the claims which have been made in this amendment, which do not narrow the scope of the claims, and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered cosmetic in nature, and to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Should there be any questions, the Examiner is invited to contact the undersigned at the below listed number.

Respectfully submitted,
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